National Aeronautics and Space Administration

Aqua: A Sample NASA Earth Science Mission

Aqua computer rendering by Marit Jentoft-Nilsen

Launched on May 4, 2002, following many years of development, NASA's Aqua satellite is in orbit around the Earth collecting data about water in all its forms (liquid, solid, vapor) and many other aspects of the Earth system. The Aqua data are helping scientists to monitor and better understand changes in the Earth's atmosphere, oceans, land, and ice covers. They are also being used for a multitude of practical purposes, such as improved weather forecasting, deployment of firefighters, and warning airline pilots of the areal coverage of potentially damaging volcanic emission plumes.

Eruption of Iceland's Eyjafjallajökull volcano, May 10, 2010, from Aqua's Moderate Resolution Imaging Spectroradiometer (MODIS).

Hurricane Irene, centered over the Bahamas on August 24, 2011, from Aqua's MODIS instrument.

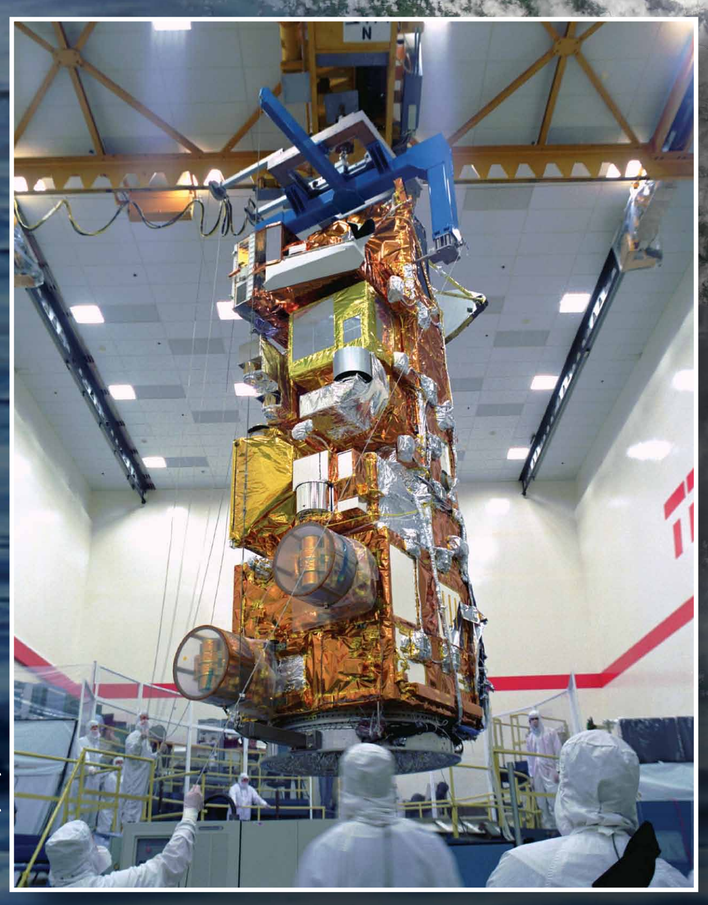
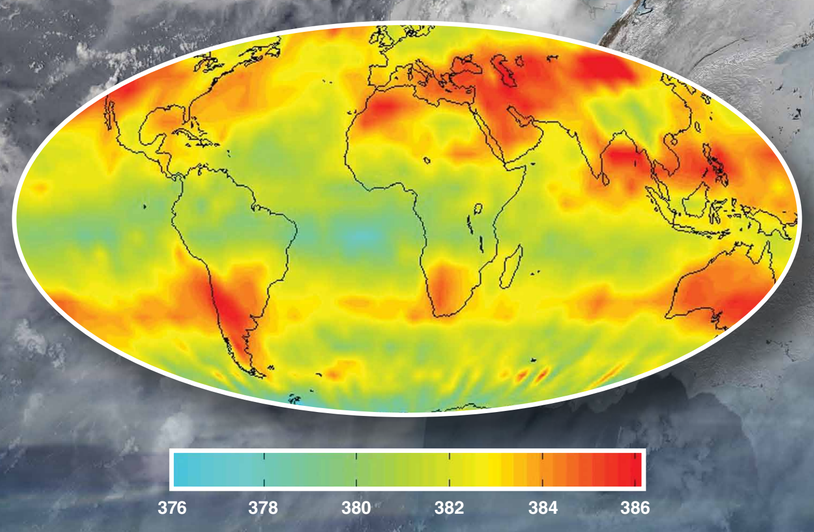


Photo by Sally Aristel/TRW

The Aqua spacecraft while under development.



Global image of atmospheric CO_2 in parts per million by volume, from Aqua's Atmospheric Infrared Sounder (AIRS).

Arctic sea ice on March 6, 2010 (above) and September 1, 2009 (right), from Aqua's Advanced Microwave Scanning Radiometer for the Earth Observing System (AMSR-E).

Some of the Women of Goddard Involved in the Aqua Mission

Photo by Steve Graham

CLAIRE L. PARKINSON
CLIMATE SCIENTIST

Has been the Project Scientist for the Aqua mission since April 1993, seeing it through its development stage as well as the years of data collection since launch. She also uses Aqua data in her research on the changing sea ice covers of the Arctic and Antarctic.

Photo by Warren Case

ANGELITA KELLY
SYSTEMS ENGINEER

Is the Mission Operations Manager for the Earth Observing System, overseeing the safe operations of Aqua and other Earth science satellites. Mission Operations runs 24 hours a day, collecting 89 Gigabytes of Aqua data daily and sending these on to users worldwide.

Photo by Steve Graham

CAROLYN DENT
AEROSPACE ENGINEER

Was the Aqua mission manager, responsible for ensuring the readiness of the ground system, operational scripts, and operations team for the Aqua launch and commissioning phase. She led the operations team through to the successful handover to Earth Science Mission Operations.

Photo by Claire Parkinson

KATHERINE BENDER
EDUCATION SPECIALIST

Was involved in educational outreach for the Aqua mission prior to its launch and during the launch activities. A former high school science teacher, she developed a remote sensing curriculum and produced educational webcasts highlighting the Aqua mission.

Photo by Claire Parkinson

LORRAINE REMER
PHYSICAL SCIENTIST

Converts Aqua data into data sets on aerosols and uses these data sets to investigate the role of airborne desert dust, smoke from fires, and urban pollution in the global climate system. She also does field work to validate the Aqua-derived aerosol products.

Photo by Claire Parkinson

PEGGY O'NEILL
EARTH SCIENTIST

Has conducted field experiments in Iowa, Oklahoma, and Arizona, measuring soil moisture for assessing the accuracy of the Aqua soil moisture measurements. These experiments help not only in interpreting the Aqua data but also in the development of future satellite sensors.

Goddard SPACE FLIGHT CENTER

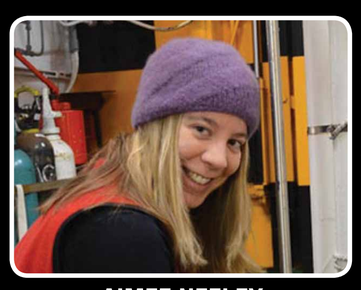


Photo by Juan Botella

AIMEE NEELEY
BIOLOGICAL OCEANOGRAPHER

Helps to check the accuracy of the ocean color products derived from Aqua data by collecting biogeochemical samples and optical profiles during ocean research expeditions. She's collected data from as far away as the Southern Ocean surrounding Antarctica.

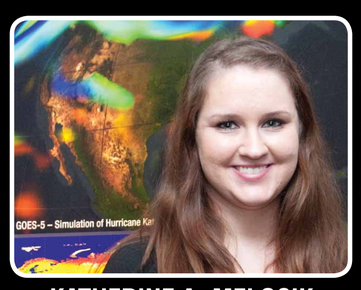


Photo by Steve Graham

KATHERINE A. MELOCIK
ENVIRONMENTAL SCIENTIST

Has used Geographic Information System (GIS) tools to assist scientists in customized conversion and reprojection of Aqua data sets ranging from land albedo to snow cover to ice-sheet surface temperatures. The GIS tools enable ready comparison of Aqua data with other data sets.

Photo by Claire Parkinson

CINDY STARR
SCIENTIFIC VISUALIZER

Works with scientists to create accurate and visually appealing representations of scientific data derived from satellites and models. Among her visualizations of Aqua data are the Arctic sea ice fields for September 1, 2009, and March 6, 2010, shown above.

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Credits: Aqua data imagery from MODIS Rapid Response, the AIRS Science Team, and the NASA Scientific Visualization Studio. Poster by Claire Parkinson and Kevin Miller.

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